

What is claimed is:

1. Image transmission system for rigid endoscopes and similar viewing tubes with a center rod lens (10') and two outer rod lenses (20, 30; 20", 30"; 20xx, 30xx; 20"xx, 30"xx), which are symmetrical to one another with respect to a center plane (100) of the image transmission system that is perpendicular to the optical axis, wherein

all lens elements (11', 12', 13', 21, 31; 32'; 23xx, 21'xx, 31'xx, 33xx; 21", 22", 31", 32") consist in each case of optically homogeneous material,

all optically active surfaces (1, 2, 3, 4, 5, 6, 7, 8) are spherical,

the center rod lens (10') consists of a rod lens main element (11') and lens elements (12', 13') cemented to it, resulting in a biconvex connecting rod lens (10'), and

the outer rod lenses (20, 30; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) are biconvex, wherein

the rod lenses (10'; 20, 30; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) are vertex-to-vertex adjacent to one another and

the center rod lens (10/) is essentially of the same length as, or longer than, the outer rod lenses (20, 30; 20", 30"; 20xx, 30xx; 20"xx, 30"xx).

2. Image transmission system for rigid endoscopes and similar viewing tubes with a center rod lens (10; 10') and two outer rod lenses (20', 30'; 20'xx, 30'xx; 20", 30"; 20xx, 30xx; 20"xx, 30"xx), which are symmetrical to one another with respect to a center plane (100) of the image transmission system that is perpendicular to the optical axis, where

all lens elements (11, 21', 22', 31'; 32'; 23xx, 21'xx, 31'xx, 33xx; 11', 12', 13', 21", 22", 31", 32") consist of optically homogeneous material,

all optically active surfaces (1, 2, 3, 4, 5, 6, 7, 8) are spherical,

the outer rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) are biconvex, and

the center rod lens (10; 10') is biconvex,

the outer rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) consist of rod lens main elements (21', 31'; 21'xx, 31'xx ; 21", 31"; 21xx, 31xx; 21"xx, 31"xx) and lens elements cemented to them on the side turned inward (22', 32'; 22', 32', 23xx, 33xx; 22", 32"; 23xx, 33xx), so that the result is biconvex connecting rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx), wherein

the rod lenses (10, 20', 30'; 10, 20'xx, 30'xx ; 10', 20", 30"; 10' 20xx, 30xx; 10', 20"xx, 30"xx) are vertex-to-vertex adjacent to one another, and

the center rod lens (10; 10') is essentially of the same length as the outer rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) or longer.

3. Image transmission system for rigid endoscopes and similar viewing tubes according to claim 1, wherein

the rod lens main element (11') is a biconcave lens and

the lens elements (12', 13') cemented to it are biconvex lenses.

4. Image transmission system for rigid endoscopes and similar viewing tubes according to claim 2, wherein

the rod lens main elements (21', 31'; 21'xx, 31'xx ; 21", 31"; 21xx, 31xx; 21"xx, 31"xx) are convex lenses on the side turned outward and are concave lenses on the side turned inward, and

the elements (22', 32'; 22', 32', 23xx, 33xx; 22", 32"; 23xx, 33xx) cemented to them on the side turned inward are biconvex lenses.

5. Image transmission system for rigid endoscopes and similar viewing tubes according to either of claims 1 or 2, wherein

the rod lens main elements (11'; 21', 31'; 21'xx, 31'xx ; 21", 31"; 21xx, 31xx; 21"xx, 31"xx) are biconvex lenses, and

the lens elements (23xx, 33xx; 22", 32") cemented to them are meniscus elements.

6. Image transmission system for rigid endoscopes and similar viewing tubes according to claim 5, wherein

the meniscus elements (23xx, 33xx; 22", 32") are positive meniscus elements.

7. Image transmission system for rigid endoscopes and similar viewing tubes according to claim 5, wherein

the meniscus elements (23xx, 33xx; 22", 32") are negative meniscus elements.

8. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims, wherein

the length of the center rod lens (10; 10') essentially corresponds to the length of the outer rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx).

9. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims, wherein

the rod lens main elements (11', 21, 31; 11; 11'; 21", 31"; 11', 21xx, 31xx; 11', 21"xx, 31"xx) are symmetrical with respect to their center plane that is perpendicular to the optical axis.

10. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims, wherein

the rod lens main elements (11', 21, 31; 11, 21', 31'; 11', 21'xx, 31'xx; 21", 31"; 11', 21xx, 31xx; 11', 21"xx, 31"xx) are asymmetrical with respect to their center plane that is perpendicular to the optical axis.

11. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims, wherein

the center rod lens (10; 10') includes ends (3, 6) that are symmetrical with respect to a symmetry plane (100) that runs through the center rod lens (10; 10') perpendicular to the optical axis.

12. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims provided it is not dependent on patent claim 2, wherein

the center connecting rod lens (10) is symmetric with respect to a symmetry plane (100) running through the center rod lens (10) perpendicular to the optical axis.

13. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims, wherein

the lens elements (12', 13'; 22', 32'; 22', 32', 23xx, 33xx; 22", 32"; 23xx, 33xx) cemented to the rod lens main elements (11'; 21', 31'; 21'xx, 31'xx ; 21", 31"; 21xx, 31xx; 21"xx, 31"xx) are symmetrical to one another with respect to a symmetry plane (100) running through the center rod lens (10; 10') perpendicular to the optical axis.

14. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims provided it is not dependent on patent claim 2, wherein

the rod lens main element (11') of the center rod lens (10') and the lens elements (12', 13') cemented to it configure the center rod lens (10') as a cylinder.

15. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims provided it is not dependent on patent claim 2, wherein

the rod lens main elements (21', 31'; 21'xx, 31'xx ; 21", 31"; 21xx, 31xx; 21"xx, 31"xx) of the outer rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) and the lens elements cemented to them (22', 32'; 23xx,

22', 33xx, 32'; 22, 32"; 23xx, 33xx; 23xx, 33xx, 22", 32") configure the outer rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) as a cylinder.

16. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims provided it is not dependent on patent claim 1, wherein

no distancing tubes are used between the rod lenses (10; 10'; 20, 30; 20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx).

17. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims provided it is not dependent on patent claim 2, wherein

the outer rod lenses (20, 30) are of one piece.

18. Image transmission system for rigid endoscopes and similar viewing tubes according to any of claims 1 to 16, wherein

the outer rod lenses (20', 30'; 20'xx, 30'xx; 20", 30", 20xx, 30xx; 20", 30"; 20"xx, 30"xx) are connecting rod lenses, which include rod lens main elements (21', 31'; 21'xx, 31'xx ; 21", 31", 21xx, 31xx; 21", 31"; 21"xx, 31"xx) and have lens elements (22', 32'; 22", 32") cemented to them on the side turned inward, so that the resulting connecting rod lenses (20', 30'; 20'xx, 30'xx; 20", 30", 20xx, 30xx; 20", 30"; 20"xx, 30"xx) are biconvex.

19. Image transmission system for rigid endoscopes and similar viewing tubes according to any of claims 1 to 16 or 18, wherein

the outer rod lenses (20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) are connecting rod lenses, which include rod lens main elements (21'xx, 31'xx ; 21", 31"; 21"xx, 31"xx) and lens elements (23xx, 33xx) cemented to them on the side turned outward, so that the resulting connecting rod lenses (20', 30'; 20'xx, 30'xx ; 20", 30"; 20xx, 30xx; 20"xx, 30"xx) are biconvex.

20. Image transmission system for rigid endoscopes and similar viewing tubes according to any of claims 2 to 18 provided it is not dependent on patent claim 1, wherein

the center rod lens (10) is in one piece.

21. Image transmission system for rigid endoscopes and similar viewing tubes according to any of claims 2 to 18 provided it is not dependent on patent claim 1, wherein

the center rod lens (10') is a connecting rod lens, which has a rod lens main element (11') to which lens elements (1', 13') are cemented to its side turned outward, so that the resulting connecting rod lens (10') is biconvex.

22. Image transmission system for rigid endoscopes and similar viewing tubes according to any of the foregoing patent claims provided it is not dependent on patent claim 1, wherein

one of more of the lens main elements can be equipped with a number of lens elements cemented to it on the side turned outward or cemented to one another.